

Claims

- [c1] A method of aligning a substrate to an exposure system, the method comprising:
- disposing a patterned substrate on a stage of an exposure system, the exposure system having an alignment routine including;
 - locating a first point of interest on the patterned substrate;
 - scanning a first area proximate the first point of interest for a first unique feature;
 - defining a periodicity for the patterned substrate;
 - locating a second point of interest based on the periodicity;
 - scanning a second area proximate the second point of interest for a second unique feature corresponding to the first unique feature;
 - gathering alignment data from at least scanning the first and second areas; and
 - determining substrate position relative to the exposure system from alignment data of at least the first and second scanned areas.
- [c2] The method as recited in claim 1, further comprising using the alignment data for aligning the substrate.
- [c3] The method as recited in claim 1, further comprising exposing the substrate with the exposure system.

- [c4] The method as recited in claim 1, wherein the substrate is a semiconductor wafer.
- [c5] The method as recited in claim 1, wherein said first and second unique features include alignment marks on the substrate.
- [c6] The method as recited in claim 1, wherein gathering alignment data includes mapping first and second points of interests and corresponding unique features to determine an orientation of the substrate.
- [c7] The method as recited in claim 1, wherein scanning the first area includes a raster movement around the first point of interest until the first unique feature is within a field of view.
- [c8] The method as recited in claim 7, wherein the first unique feature is saved as an alignment image for use in locating the second unique feature in the second area.
- [c9] The method as recited in claim 1, wherein the alignment routine is configured to provide a path for automatic correction should the alignment routine fail to align.
- [c10] The method as recited in claim 1, wherein the substrate comprises a plurality of exposure fields, wherein the method comprises at least one of inspecting and measuring at least one point of interest in each field of a plurality of exposure

fields.

[c11] The method as recited in claim 1, wherein the substrate comprises a plurality of exposure fields, wherein each exposure field comprises at least one unique feature.

[c12] A method of aligning a patterned substrate having a plurality of segments and measuring the same, the method comprising:
defining a point of interest for each segment of the patterned substrate;
locating a first point of interest in a first segment;
scanning a first area proximate the first point of interest for a first unique feature;
saving a scanned image of the first area;
defining a periodicity for the patterned substrate;
locating a second point of interest in a second segment based on the periodicity;
scanning a second area proximate the second point of interest for a second unique feature corresponding to the first unique feature;
mapping the alignment of the substrate with respect to tooling in which it is disposed with;
measuring the second point of interest; and
locating a third point of interest in a third segment based on the periodicity.

[c13] The method as recited in claim 12, further comprising

exposing the substrate with an exposure system.

[c14] The method as recited in claim 12, wherein the substrate is a semiconductor wafer.

[c15] The method as recited in claim 12, wherein said first and second unique features include alignment marks on the substrate.

[c16] The method as recited in claim 12, wherein the mapping the alignment determines an orientation of the substrate relative to the tooling.

[c17] The method as recited in claim 12, wherein scanning the first area includes a raster movement around the first point of interest until the first unique feature is within a field of view.

[c18] The method as recited in claim 12, wherein the substrate comprises a plurality of exposure fields each corresponding to a respective segment, wherein the method comprises at least one of inspecting and measuring at least one point of interest in each field of a plurality of exposure fields.

[c19] The method as recited in claim 12, wherein the substrate comprises a plurality of exposure fields each corresponding to a respective segment, wherein each exposure field comprises at least one unique feature.

[c20] The method as recited in claim 19, wherein the at least one

unique feature is similarly oriented with respect to each corresponding segment.